

Researchers develop a new tool to assess the performance of air cargo supply chain operations

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The cargo industry has undergone a major transformation over the past 20 years, with air freight now preferred for a wide range of products. In 2006, the air cargo industry was responsible for distributing 35% of all international trade, and the Asia-Pacific region accounted for almost half

of all air deliveries.

The spectacular performance of the air cargo industry has fueled not only the development of regional logistics industries but also local economic growth. And as the air cargo industry continues to grow, the necessity for economic, industrial and airport operations reforms becomes inevitable. Xue-Ming Yuan at the A*STAR Singapore Institute of Manufacturing Technology and co-workers at the National University of Singapore have now developed a diagnostic tool called the air-cargo supply-chain operations reference (ACSCOR) model to evaluate the impact of these reforms on airport performance.

The ACSCOR model is quite similar to the SCOR model, the standard tool most industries use for assessing [supply chain management](#) practices. However, whereas the SCOR model evaluates performance on three levels, namely customer interactions, product transactions and market interactions, the ACSCOR model covers four levels: the airport, airfreight sector, logistic industry and economy.

The researchers demonstrated the usefulness of the ACSCOR model by applying it to case studies of Hong Kong Chak Lap Kok International Airport and Singapore Changi International Airport—two of the world's busiest air cargo hubs. Using air traffic, capacity and cost data for 2002–2007, the ACSCOR model indicated that air cargo traffic is significantly influenced by the airport's operational efficiency, logistics support and economic environment. They also found that in order for the air cargo industry to remain competitive, the air freight sector must integrate with other supporting sectors in the logistics industry to form a seamless network for cargo transport.

In the case of Hong Kong, cost control was found to be important as it can have negative effects on air cargo traffic. In the case of Singapore, the ACSCOR model finds that enhanced utilization of physical facilities

at the airside or landside may be beneficial. “The ACSCOR model shows that Singapore Changi International Airport has allowed Singapore’s economy to benefit from higher returns in terms of the spillover effect to the overall air cargo supply chain,” says Yuan.

The findings demonstrate the usefulness of ACSCOR as a diagnostic tool for providing decision makers with an in-depth insight into the impact of various factors on air cargo traffic.

More information: Yuan, X.M., et al. Roles of the airport and logistics services on the economic outcomes of an air cargo supply chain. *International Journal of Production Economics* 127, 215–225 (2010)

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